REMARKS

This Amendment is being filed with a Request for Continued Examination pursuant to 37 C.F.R. § 1.114. Continued examination of the application is respectfully requested.

In claims 3, 6, 13 and 20, the words "a field unit" were changed to the words "the subscriber unit" to properly refer to an antecedent "subscriber unit" in these claims.

In claims 11, 12, 14, 19 and 21, the word "a" was changed to the word "the" to properly refer to an antecedent "base station."

§ 112 Rejection

In the Office Action, claims 1, 3, 5 and 7 were rejected under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claims 1, 3, 5 and 7 have been amended to properly refer to an antecedent "base station." Applicant believes these changes overcome the above rejection to claims 1, 3, 5 and 7 and therefore respectfully requests the above rejection to these claims be withdrawn.

§ 103 Rejection of Claims 4-28

In the Office Action, claims 4-28 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent Number 6,324,184 to Hou, *et al.* (hereinafter "Hou") in view of U.S. Patent Number 6,426,943, to Spinney, *et al.* (hereinafter "Spinney").

Brief Description of the Present Invention

The present invention relates to a technique for providing multiple grades of wireless service for data communication between a base station and multiple subscriber units over one or more Code Division Multiple Access (CDMA) communication channels. Each grade of service is associated with a corresponding priority level. In particular, bandwidth resources are shared in a way that degradation of service, experienced by a particular user, happens fairly and in a

graceful fashion, such that, users demanding excess resources (e.g., bandwidth) are, over time, allocated fewer resources than users that have historically used fewer resources.

Brief Description of the Cited Art

Hou teaches a technique for allocating bandwidth among users (subscriber units) that are assigned to a given channel in a time-division-multiple-access (TDMA) communication network. According to the technique, one or more users are assigned to a channel which has one or more of slots that may be allocated to the users. For each user, a traffic count is determined by counting the number of slots used by the user in a particular control interval (i.e., a time increment which may be synchronized with a number of slots, frames, and/or superframes of a channel, although synchronization is not mandatory). See column 8, lines 7-38 and column 9, lines 8-22. A ratio of the traffic count and the number of slots assigned to the user is then calculated. A check is performed to determine if the ratio is less than or equal to a lower slot utilization threshold. If so, the number of slots assigned to the user for the next control interval is reduced. If the ratio is greater than the lower slot utilization threshold, an additional check is performed to determine if the ratio is greater than or equal to an upper slot utilization threshold. If so, the user is marked for a possible increase in bandwidth in the subsequent control interval. Otherwise, if the ratio is less than the upper slot utilization threshold the number of slots for the user is not changed. See column 9, line 45 to column 10, line 41 and FIG. 4.

When all the users for the channel have been processed, the remaining slots available for that channel are allocated among the marked users according to a scheme. One scheme Hou describes involves allocating bandwidth to users based on a fee. Users that pay the fee are granted bandwidth ahead of users that do not pay the fee. See column 10, line 42 to column 11, lines 30 and FIG. 4. Another bandwidth allocation scheme described by Hou involves imposing a maximum bandwidth ceiling that may be allocated to a user to ensure the user does not take all the available bandwidth away from other users who may have lower priorities but yet still need bandwidth. This scheme ensures, to some degree, fairness among users when allocating bandwidth. See column 11, lines 31-36. A third bandwidth allocation scheme described by Hou involves allocating bandwidth to a user based upon a historical record of bandwidth usage by the user. In this scheme, users that have historically low usage levels may be given a higher priority for acquiring bandwidth level than they would receive otherwise. Bandwidth may also be further

allocated based upon a historical profile of total channel bandwidth usage. Here, a bandwidth ceiling for a particular user associated with a channel may be increased during off-peak-network hours if e.g., the channel has historically low bandwidth usage. See column 11 lines 37-60.

Spinney describes a data communication switch that tracks a number of data bytes processed by the switch for a particular data flow and determines if the number of bytes indicate that the flow is part of a bulk transfer. If so, the switch automatically lowers the priority of the data flow by placing packets associated with the flow on a lower priority queue. See column 2 lines 55 through 63.

Specifically, a data flow is associated with a threshold value, a starting priority and an ending priority associated with the flow. The starting priority is a priority that is accorded to the flow at the beginning of the flow and before a bulk transfer. The ending priority is a priority accorded to the flow after a bulk transfer determination is made (i.e., the flow is a bulk transfer). The threshold value is used to determine whether the flow is a bulk data transfer. If the number of bytes received for the flow is greater than the threshold value, the flow is (a) considered a bulk data transfer, (b) given the lower priority and (c) packets associated with the flow are placed on a queue associated with the lower priority. Otherwise, if the bytes received for the flow do not exceed the threshold value, the flow is (a) not considered a bulk transfer, (b) is given the higher priority and (c) packets associated with the flow are placed on a queue associated with the higher priority. See column 28 line 48 to column 29 line 23 and Figure 44.

Differences between the Present Invention and the Cited Art
Representative claim 4 recites:

4. A method for providing multiple grades of service in a demand access wireless communication system, comprising:
    identifying a priority level of a user requesting allocation of bandwidth for transmitting data information to a base station depending on whether a previous historical usage of resources by that user exceeds a threshold, such that:
        if the previous historical usage by the user is higher than the threshold, the user is assigned a lower priority level for transmitting data information, the lower priority level *entitling the user to use of fewer channels than otherwise allowed when a higher priority level is assigned,* and
        if the previous historical usage by the user is lower than the threshold, the user is assigned a higher priority level for transmitting data information, the

higher priority level entitling the user use of more channels than otherwise allowed when a lower priority level is assigned; and

allocating bandwidth to the user depending upon the corresponding priority level so identified.

Applicant respectfully submits that neither Hou nor Spinney taken either singly or in combination teach or suggest Applicant's claimed *"if the previous historical usage by the user is higher than the threshold... **entitling the user to use of fewer channels than otherwise allowed when a higher priority level is assigned."***

Page 4 of the Office Action notes that Hou <u>does not expressly disclose</u> "if the previous historical usage by the user is higher than the threshold, the user is assigned a lower priority level." Applicant respectfully interprets this to mean that Hou does not disclose Applicant's claimed *"if the previous historical usage by the user is higher than the threshold, the user is assigned a lower priority level for transmitting data information."* Thus, Hou provides no teaching or suggestion for **entitling the user to use of fewer channels than otherwise allowed when a higher priority level is assigned** if the previous historical usage by the user is higher than a threshold, as claimed by Applicant.

Spinney teaches assigning a lower priority to a data flow that has exceeded a byte count threshold, however, according to Spinney this entitles data packets associated with the flow to be <u>placed on a lower priority queue</u>. Nowhere does Spinney teach or suggest **entitling a user to the use of fewer channels than otherwise allowed when a higher priority level is assigned** as claimed by Applicant.

For reasons set forth above, Applicant respectfully believes that neither Hou nor Spinney render Applicant's claims 4-28 obvious under 35 U.S.C. § 103. Therefore, Applicant respectfully requests that the above rejections to claims 4-28 be withdrawn.

<u>§ 103 Rejection of Claims 1 and 3</u>

In the Office Action, claims 1 and 3 were rejected under 35 U.S.C. § 103 as being unpatentable over Hou in view of Spinney and U.S. Patent Number 6,101,176 to Honkasalo, *et al.*, (hereinafter "Honkasalo").

Brief Description of Additional Cited Art

Honkasalo describes a technique for operating two separate Code Division Multiple Access (CDMA) communication systems in the same coverage area. See column 3 lines 24 through 28. According to the technique, a first frequency is used for downlink radio communication and a second frequency is used for uplink radio communication. A first CDMA communication system observes radio communications within the second communication system on the first frequency and the second frequency. Based upon this observation, the first communication system selects one of either the first or second frequencies and communicates on the selected frequency by dividing the selected frequency into cyclically occurring time slots using a time division duplex (TDD) method. See column 3 lines 48-62.

In another embodiment, Honkasalo describes using orthogonal spread codes and received power of signals to determine if a reference frequency is selected for a particular station. According to this embodiment, if a decoded signal power associated with a first orthogonal spread code is less than a first threshold and if the general level of radio interference on the reference frequency is less than a second threshold the reference frequency is selected and used for communication. See column 3 line 63 to column 4 line 30.

In yet another embodiment, Honkasalo describes a technique wherein a base station that services a mobile station detects and measures transmissions of other radio communications systems and uses these measurements to determine a frequency or frequency band of the other radio communication system that contains unused capacity. The base station then uses this unused capacity to communicate with mobile systems. See column 4 lines 31 through 44.

Representative claim 1 recites in relative part:

> 1. A method of providing multiple grades of wireless service to multiple field
> users for communication of data between a base station and multiple subscriber
> units over one or more CDMA communication channels, each grade of service
> having a corresponding priority level, the method comprising the steps of: ....
> identifying a priority level of a user requesting allocation of bandwidth for
> transmitting data information to the base station depending on whether a previous
> historical usage of resources by the user exceeds a threshold, such that:
> if the previous historical usage by the user is higher than the
> threshold, ***the user is assigned a lower priority level for transmitting data***

information, the lower priority level entitling the user to use of fewer channels than otherwise allowed when a higher priority level is assigned, ...

Applicant respectfully submits that Hou, Spinney and Honkasalo, taken either singly or in combination, do not teach or suggest applicants claimed *"the user is assigned a lower priority level for transmitting data information, the lower priority level entitling the user to the use of fewer channels than otherwise allowed when a higher priority level is assigned."*

As noted above, Hou and Spinney do not teach this limitation. Further, Honkasalo is silent with regards to this limitation.

For reasons set forth above, Applicant respectfully submits that Hou, Spinney and Honkasalo taken either singularly or in combination, do not render Applicant's claims 1 and 3 unpatentable under 35 U.S.C. § 103. Therefore, Applicant respectfully requests that the above rejection to claims 1 and 3 be withdrawn.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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